UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
2625	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

	Application No.	Applicant(s)
Office Action Summary	10/541,611	YAMANAKA ET AL.
	Examiner	Art Unit
	RICHARD Z. ZHU	2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _25 November 2008_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-7_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-7_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Acknowledgement

1. Acknowledgement is made of applicant's amendment made on 11/25/2008. Applicant's

submission filed has been entered and made of record.

Status of the Claims

2. Claims 1-7 are pending.

Response to Applicant's Arguments

3. In re "**The Examiner argues that column 5, lines 50-60 teach a plurality of interpolation**

circuits each performing interpolation. This is incorrect. In column 5, Zhang et al.

refers to determining the least harmful edge and the defining of pixels and subpixels in

that edge. Different normalization calculations may be used to make this determination.

However, this is not interpolation. Further, although different normalization techniques

may be used, they are not used independently on the same pixels. In other words, one

technique is chosen amongst a plurality of techniques and then this chosen technique is

used on all pixels. The plurality of techniques are not used independently on each

pixel".

   In re Prater, **415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969)**, the

court explained that "reading a claim in light of the specification, to thereby interpret

limitations explicitly recited in the claim, is a quite different thing from reading limitations of

the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding

disclosed limitations which have **no express basis in the claim**." The court found that applicant was advocating the latter, i.e., the **impermissible importation** of subject matter from the specification into the claim.

While the specification is clear about the definition of "interpolation candidate data" of an interpolation pixel and test interpolation data, said definition has **no express basis in at least Claims 1 and 4**. Since pixels **s, t, u, and v** are test pixels actually interpolated out of a, b, c, d, e and f (**Col 5, Row 60 – Col 6, Row 10**), it is interpreted as test interpolation data of a plurality of pixels a, b, c, d, e, f, s, t, u, v neighboring the interpolation pixel "x". The examiner broadly interpreted the term "interpolation candidate data" to mean data indicative of absolute difference values between (s-v, u-t) and interpolation pixel "x" (**Col 7, Rows 10-15**).

In this broad and reasonable interpretation, *Zhang* does teach comparing differences between test interpolation data (s-v, u-t) and actual pixel data (a-f, b-e, c-d) (**Col 7, Rows 14-19, comparing respective absolute differences of a-f, b-e, c-d, s-v, u-t with each other to find the least harmful pair to be selected for the interpolation of pixel "x"**), contrary to applicant's assertion that "**Zhang et al. fails to teach comparing differences between test interpolation data and actual pixel data. Zhang et al. performs a single interpolation which is the end result for a missing pixel. It does not compare this interpolation data with any other pixel data**".

4. In re "**Zhang et al. also fails to teach,** *inter alia,* **calculating interpolation candidate data of a interpolation pixel and test interpolation data of a plurality of pixels neighboring**

the interpolation pixel, using different interpolation methods and selecting one of the

interpolation methods based on a difference between the test interpolation data and

actual pixel data, as recited in claim 4".

In addition to the explanation provided above, *Zhang* teaches using either a software

programmed interpolation circuit or hardware interpolation circuit for each of interpolation

methods $|a-f|/2, |b-e|/2, |c-d|/2, |s-v|/2, |u-t|/2$ **(Col 7, Rows 20-25)** and selecting the least

harmful method to interpolate missing pixel x **(Col 7, Rows 19-25)**, therefore it does disclose

"using different interpolation methods and selecting one of the interpolation methods based

on a difference between the test interpolation data and actual pixel data".

In view of the above, the examiner respectfully asserts that the rejections under 35

USC 102 and 35 USC 103 are proper. Accordingly, current grounds of rejections are

maintained.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(a) the invention was known or used by others in this country, or patented or described in a printed
publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public
use or on sale in this country, more than one year prior to the date of application for patent in the United
States.

(e) the invention was described in — (1) an application for patent, published under section 122(b), by
another filed in the United States before the invention by the applicant for patent or (2) a patent granted on
an application for patent by another filed in the United States before the invention by the applicant for
patent, except that an international application filed under the treaty defined in section 351(a) shall have the

effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 1, 3-4, and 6 are rejected under 35 USC 102(e) as being anticipated by *Zhang et al*

   (US 7136541 B2) and alternatively under 35 USC 102(a) by *Zhang et al. (US 2004/0076343*

   A1). Referring to *Zhang et al (US 7136541 B2)* for disclosure unless recommended

   otherwise.

   Regarding the circuits of Claim 1 and therefore method of Claim 4, *Zhang*

discloses a pixel interpolation circuit for generating interpolation pixel data which

interpolates an input image based on pixel data composing the input image, the pixel

interpolation circuit **(Col 7, Rows 1-25, the interpolation method can be implemented as**

software executing on an image processing device as well as with hardware or

combination thereof) comprising:

   a plurality of interpolation circuits each calculating interpolation candidate data of a

interpolation pixel **(Col 5, Rows 50-60, unknown or missing pixel "x")** and test

interpolation data **(Figs 1-2 and see Col 5, Row 50 – Col 6, Row 10, a, b, c, d, e, and f are**

actual pixels whereas s, t, u, v are test pixels generated from the actual pixels) of a

plurality of pixels neighboring the interpolation pixel **(Figs 2-4 and see Col 5, Row 18 – Col**

6, Row 44), using different interpolation methods **(Fig 2 and see Col 5, Rows 18 – 32 and**

Col 6, Rows 18-32, at least the interpolation methods of leftward-up comprising a-f and

s-v, vertical-up consisting b-c and rightward-up t-u and c-d);

a determining circuit for selecting one of the interpolation circuits based on a

difference between the test interpolation data and actual pixel data (**Col 5, Rows 18 – 32, Col**

6, Rows 18-32, and Rows 57-63, determining the value for x on the basis of a difference

between actual pixels and test pixels by, for example, comparing the absolute value of

differences of test pixels s-v with that of actual pixels b-e); and

an output circuit for outputting the interpolation candidate data calculated by the

selected interpolation circuit as the interpolation pixel data (**Col 6, Rows 10-18, determining**

the method that generates the "least harmful" result).

Regarding the circuits of Claim 3 and therefore method of Claim 6, *Zhang*

discloses wherein the determining circuit calculates binarized or ternarized values of the

difference between the test interpolation data and the actual pixel data (**Col 5, Rows 18 – 32**

and Col 6, Rows 18-32, 1. a-f vs. s-v, 2. a-f vs. b-e, 3. a-f vs. c-d).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person
having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
manner in which the invention was made.

8.   Claims 2, 5, and 7 are rejected under 35 USC 103(a) as being unpatentable over *Zhang et al*

(US 7136541 B2) or alternatively by *Zhang et al. (US 2004/0076343 A1)*, in view of

Utagawa (US 6563538 B1). Referring to *Zhang et al (US 7136541 B2)* for disclosure unless recommended otherwise.

Regarding the circuits of Claim 2 and therefore method of Claim 5, *Zhang* discloses wherein the determining circuit calculates a evaluation data for each of the interpolation circuits and selects one of the interpolation circuits based on the evaluation data **(Col 5, Rows 18-32 and Col 6, Rows 18-32, evaluating if the conditions for methods (a+f)/2, (s+v)/2, (t+u)/2, (c+d)/2, or (b+e)/2 holds. If the condition for any one of the methods holds, said method is selected).**

Zhang does not teach calculates a evaluation data for each of the interpolation circuits, by summing up the absolute values of the difference between the test interpolation data and the actual pixel data.

Utagawa discloses a circuit for interpolating a pixel value for an unknown coordinate on the basis of a plurality of neighboring pixels **(Fig 2, Signal Processor 46 and see Fig 5 and Col 7, Row 45 – Col 8, Row 40)** by employing one method of interpolation out of a plurality of interpolation methods **(Col 7, Row 60 – Col 8, Row 20, at least the method of up, down, left, and right)** wherein the determining circuit calculates a evaluation data for each of the interpolation circuits, by summing up the absolute values of the difference between actual neighboring pixel data **(Col 7, Row 60 – Col 8, Row 20)**, and selects one of the interpolation circuits based on the evaluation data **(Col 8, Rows 30-34)**.

Zhang suggested that one of ordinary skill in the art would appreciate the teachings therein and that it fully encompasses other embodiments. As such, by disclose generating test

pixels s, t, u, and v from actual pixels a, b, c, d, e and f so as to generate a full neighborhood

pixel group similar to that of Fig 5 of *Utagawa*, it would've been obvious to one of ordinary

skill in the art to modify the method of *Zhang* with that of *Utagawa* so that evaluation data

are generated by summing up the absolute values of the difference between test pixel data

and actual pixel data **(that is, G(k, p-1-n), G(k, p+1-n), G(k-1, p-n), and G(k+1, p-n)**

would correspond to s, t, u, v) whereas the motivation would've been to accurately obtains

the interpolation amount of the empty grid points (***Utagawa*, Col 3, Rows 15-20**).

Regarding Claim 7, *Utagawa* discloses an image scanner comprising a pixel

interpolation circuit **(Fig 2 and see Col 5, Rows 32-40)**.

Conclusion

9. **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as

set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until

after the end of the THREE-MONTH shortened statutory period, then the shortened statutory

period will expire on the date the advisory action is mailed, and any extension fee pursuant to

37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Richard Z. Zhu whose telephone number is 571-270-1587 or examiner's supervisor King Y. Poon whose telephone number is 571-272-7440. Examiner Richard Zhu can normally be reached on Monday through Thursday, 0630 - 1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RZ^2 Richard Z. Zhu
01/28/2008   Assistant Examiner
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/King Y. Poon/

Supervisory Patent Examiner, Art Unit 2625